

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1 1-100. (Canceled)

1 101. (New) A method for providing printer recognition and management of a
2 print job entity, comprising:
3 establishing a repository of attributes and status information associated with each
4 print job that passes through a printer system;
5 providing an interface to a plurality of components to allow access to the
6 attributes and status information in the repository by the plurality of components;
7 establishing a job monitor for managing the repository of attributes and status
8 information associated with each print job, for responding to a call by a printer
9 component and for managing interactions between printer components in order to control
10 the processing of the job; and
11 fetching, jobs, using, the job monitor, in an order that is dependent upon the
12 calling component.

1 102. (New) The method of claim 101 wherein the interface comprises at least
2 one of a Web Page channel, a multiplexer to manage the routing of jobs to the print
3 engine and a spooler, a job control function interface, a pipeline interface, an operations
4 panel interface and a pull print interface.

1 103. (New) The method of claim 101 further comprising providing by the
2 interface an ability for components to process a job according to requirements of the
3 component and reporting job attributes and processing status of the job for common
4 access by other components.

1 104. (New) The method of claim 101 further comprising providing by the
2 interface access to maintained job variable to the components.

1 105. (New) The method of claim 101 further comprising providing by the
2 interface to a component access to common variables, the components presenting job
3 attributes or status to the interface.

1 106. (New) The method of claim 105 wherein the attributes are presented
2 according to requirements dictated by the interface.

1 107. (New) The method of claim 101 wherein the interface provides the ability
2 for components to create job entries, obtain and set job attributes, manipulate the state
3 and status of jobs in the system, and obtain job ordering information pertinent to the
4 calling component.

1 108. (New) The method of claim 101 wherein the repository provides a global
2 view of jobs within the printer, the global view includes an actively printing job, jobs in
3 the process of being spooled, jobs on the spool queue, and jobs on the pull print queue.

1 109. (New) The method of claim 101 wherein the interface accommodates
2 implementation of port connection managers and pass job information from a port
3 connection manager to the repository.

1 110. (New) The method of claim 101 wherein the interface cancels jobs.

1 111. (Original) The method of claim 110 wherein a cancelled job comprises a
2 current job.

1 112. (New) The method of claim 110 wherein a cancelled job comprises a job
2 having a selected attribute.

1 113. (New) The method of claim 101 further comprising providing logical
2 views to obtain a next job to be processed by a component and to obtain a list of all jobs
3 in the order that they are processed.

1 114. (New) The method of claim 101 further comprises obtaining a Job ID,
2 performing a query for attributes of a job, updating job attributes, canceling jobs,
3 providing logical views of a job, handling printer events, getting attributes of the printer
4 and setting printer attributes by the job monitor.

1 115. (New) The method of claim 114 wherein the attributes are updated
2 through the job monitor.

1 116. (New) The method of claim 114 wherein the job monitor provides the
2 ability for any component to set job attributes.

1 117. (New) The method of claim 114 wherein the job monitor uses job states to
2 control the flow of jobs.

1 118. (New) The method of claim 114 further comprising determining a next
2 job to and determining valid states for a call by the component.

1 119. (New) The method of claim 118 further comprising maintaining a valid
2 state for a multiplexer.

1 120. (New) The method of claim 119 wherein the maintaining a valid state for
2 a multiplexer further comprises:

3 placing an incoming job into an unknown state when a job identification is
4 requested;

5 placing the incoming job in the Pull Print queue when the job is stop-flowed at a
6 port connection manager waiting for access to the printer because a print engine is
7 processing another job; and

8 selecting the incoming job and processing the job according to whether the job
9 must be spooled, may spool or must print.

1 121. (New) The method of claim 120 wherein the incoming job is routed to the
2 print engine or the spooler according to which comes first when the job is a job that may
3 spool.

1 122. (New) The method of claim 120 wherein the incoming job is placed in a
2 pending spooler when the job is a job that must be spooled.

1 123. (New) The method of claim 120 further comprising indicating a done
2 state for the multiplexer when the job has been printed.

1 124. (New) The method of claim 118 further comprising maintaining a valid
2 state for a spooler.

1 125. (New) The method of claim 124 wherein the maintaining a valid state for
2 a spooler further comprises:

3 receiving a job identification request;
4 entering a not spooled state when the spooler has not yet processed the job;
5 entering a spooling, can despool state when the job is being written to the spool
6 device thereby allowing the job to be selected for despooling at any time;

7 entering a spooling, despooling state when the job is being written to the spool
8 device and is also being read from the spool device;

9 entering a waiting to despool state when the end of the job has been received;
10 entering a despooling state when the job is being read from the spool device and
11 written to the multiplexer; and

12 entering the done state when the job is finished being processed by the spooler.

1 126. (New) The method of claim 125 wherein a job that is printed directly and
2 not processed by the spooler remains in the not spooled state.

1 127. (New) The method of claim 118 further comprising maintaining a valid
2 state for an interpreter.

1 128. (New) The method of claim 127 wherein the maintaining a valid state for
2 a interpreter further comprises:

3 entering a waiting for data stated when job processing by the interpreter has
4 started;

5 entering an interpreting state when the job is being processed by the interpreter;
6 and

7 entering a done state when the job is finished being processed by the interpreter.

1 129. (New) The method of claim 118 further comprising maintaining a valid
2 state for a print engine.

1 130. (New) The method of claim 129 wherein the maintaining a valid state for
2 a print engine further comprises:
3 entering a waiting for pages state when job processing by an interpreter has not
4 yet started;
5 entering a waiting for pages state when the job has started;
6 entering the pages queued state when one or more pages for the job have been
7 created by the interpreter and written to the page buffer;
8 entering the pages printing state when one or more pages for the job have been
9 delivered to the output tray; and
10 entering the done state when the last page for the job has been delivered to the
11 output tray.

1 131. (New) The method of claim 101 further comprising handling incoming
2 jobs with a port connection manager, wherein the port connection manager calls to a
3 multiplexer to process the job.

1 132. (New) The method of claim 101 further comprising deciding whether to
2 assign a job to the printer, whether to assign a job to a spooler, whether the job must wait
3 for available resources or whether the job cannot be processed.

1 133. (New) The method of claim 101 further comprising requesting from a job
2 monitor a job identification prior to processing the job by a multiplexer.

1 134. (New) The method of claim 133 further comprising storing the job
2 identification in a job table and clearing the job identification from the table when an end
3 of job is called by a port connection manager.

1 135. (New) The method of claim 101 further comprising examining by the job
2 monitor process job states and variables to determine the correct response and to return
3 an appropriate job identification for a job.

1 136. (New) The method of claim 101 further comprising providing an event
2 registration to provide a methodology for a controller to indicate events to a job monitor,
3 wherein the Job Monitor serves as the system focal point for tracking job related events
4 as they occur during the course of an entire print process.

1 137. (New) The method of claim 136 further comprising defining events for
2 the job monitor.

1 138. (New) The method of claim 101 further comprising providing a job
2 monitor for addressing job processing complexity by viewing a job on a higher
3 conceptual plane rather than managing a collection of attributes and status variables that
4 is unique for each data channel.

1 139. (New) The method of claim 101 further comprising providing a job
2 monitor for providing a common method of accessing the variables associated with a job
3 for the components.

1 140. (New) An apparatus for providing printer recognition and management of
2 a print job entity, comprising:

3 a repository of attributes and status information associated with each print job that
4 passes through a printer system;
5 an interface to a plurality of components, the interface providing access to the
6 attributes and status information in the repository by the plurality of components; and
7 a job monitor for managing the repository of attributes and status information
8 associated with each print job, for responding to a call by a printer component and for
9 managing interactions between printer components in order to control the processing of
10 the job;

11 wherein the job monitor fetches jobs in an order that is dependent upon the calling
12 component.

1 141. (New) The apparatus of claim 140 wherein the interface comprises at least
2 one of a Web Page channel, a multiplexer to manage the routing of jobs to the print
3 engine and a spooler, a job control function interface, a pipeline interface, an operations
4 panel interface and a pull print interface.

1 142. (New) The apparatus of claim 140 wherein the interface provides an
2 ability for components to process a job according to requirements of the component and
3 reports job attributes and processing status of the job for common access by other
4 components.

1 143. (New) The apparatus of claim 140 wherein the interface provides access
2 to maintained job variable to the components.

1 144. (New) The apparatus of claim 140 wherein the interface provides a
2 component access to common variables, the components presenting job attributes or
3 status to the interface.

1 145. (New) The apparatus of claim 144 wherein the attributes are presented
2 according to requirements dictated by the interface.

1 146. (New) The apparatus of claim 140 wherein the interface provides the
2 ability for components to create job entries, obtain and set job attributes, manipulate the
3 state and status of jobs in the system, and obtain job ordering information pertinent to the
4 calling component.

1 147. (New) The apparatus of claim 140 wherein the repository provides a
2 global view of jobs within the printer, the global view includes an actively printing job,
3 jobs in the process of being spooled, jobs on the spool queue, and jobs on the pull print
4 queue.

1 148. (New) The apparatus of claim 140 wherein the interface accommodates
2 implementation of port connection managers and pass job information from a port
3 connection manager to the repository.

1 149. (New) The apparatus of claim 140 wherein the interface cancels jobs.

1 150. (New) The apparatus of claim 149 wherein a cancelled job comprises a
2 current job.

1 151. (New) The apparatus of claim 149 wherein a cancelled job comprises a
2 job having a selected attribute.

1 152. (New) The apparatus of claim 140 wherein the a repository and interface
2 are provided by a job monitor, the job monitor further providing logical views to obtain a
3 next job to be processed by a component and to obtain a list of all jobs in the order that
4 they are processed.

1 153. (New) The apparatus of claim 140 wherein the job monitor obtains a Job
2 identification, performs a query for attributes of a job, updates job attributes, cancels
3 jobs, provides logical views of a job, handles printer events, gets attributes of the printer
4 and sets printer attributes.

1 154. (New) The apparatus of claim 153 wherein the attributes are updated
2 through the job monitor.

1 155. (New) The apparatus of claim 153 wherein the job monitor provides the
2 ability for any component to set job attributes.

1 156. (New) The apparatus of claim 153 wherein the job monitor uses job states
2 to control the flow of jobs.

1 157. (New) The apparatus of claim 153 wherein the job monitor determines a
2 next job to process, the component determining valid states for a call.

1 158. (New) The apparatus of claim 157 further comprising a multiplexer.

1 159. (New) The apparatus of claim 158 wherein the valid states for a
2 multiplexer further comprise:
3 an unknown stated for when a job identification is requested; and
4 a pull print queue state for the job when the job is stop-flowed at a port
5 connection manager waiting for access to the printer because a print engine is processing
6 another job;

7 wherein the multiplexer receives the job and selects to place the job in a job must
8 be spooled state, a may spool state or must print state.

1 160. (New) The apparatus of claim 159 wherein the multiplexer routes the
2 incoming job to the print engine or the spooler according to which becomes available first
3 when the job is a job that may spool.

1 161. (New) The apparatus of claim 159 wherein the multiplexer places an
2 incoming job in a pending spooler when the job is a job that must be spooled.

1 162. (New) The apparatus of claim 159 wherein the multiplexer enters a done
2 state for the multiplexer when the job has been printed.

1 163. (New) The apparatus of claim 157 further comprising a spooler.

1 164. (New) The apparatus of claim 163 wherein the spooler receiving a job
2 identification request, enters a not spooled state when the spooler has not yet processed
3 the job, enters a spooling, can despool state when the job is being written to the spool
4 device thereby allowing the job to be selected for despooling at any time, enters a
5 spooling, despooling state when the job is being written to the spool device and is also
6 being read from the spool device, enters a waiting to despool state when the end of the
7 job has been received, enters a despooling state when the job is being read from the spool
8 device and written to the multiplexer and enters the done state when the job is finished
9 being processed by the spooler.

1 165. (New) The apparatus of claim 164 wherein a job that is printed directly
2 and not processed by the spooler remains in the not spooled state.

1 166. (New) The apparatus of claim 157 further comprising an interpreter.

1 167. (New) The apparatus of claim 166 wherein the interpreter enters a waiting
2 for data state when job processing by the interpreter has started, enters an interpreting
3 state when the job is being processed by the interpreter and enters a done state when the
4 job is finished being processed by the interpreter.

1 168. (New) The apparatus of claim 157 further comprising a print engine.

1 169. (New) The apparatus of claim 168 wherein the print engine enters a
2 waiting for pages state when job processing by an interpreter has not yet started, enters a
3 waiting for pages state when the job has started, enters the pages queued state when one
4 or more pages for the job have been created by the interpreter and written to the page
5 buffer, enters the pages printing state when one or more pages for the job have been
6 delivered to the output tray and enters the done state when the last page for the job has
7 been delivered to the output tray.

1 170. (New) The apparatus of claim 140 wherein the a repository and interface
2 are provided by a job monitor, the job monitor further handling incoming jobs with a port
3 connection manager, wherein the port connection manager calls to a multiplexer to
4 process the job.

1 171. (New) The apparatus of claim 140 wherein the a repository and interface
2 are provided by a job monitor, the job monitor further deciding whether to assign a job to
3 the printer, whether to assign a job to a spooler, whether the job must wait for available
4 resources or whether the job cannot be processed.

1 172. (New) The apparatus of claim 140 wherein the a repository and interface
2 are provided by a job monitor, the job monitor receiving a request for a job identification
3 prior to processing the job by a multiplexer.

1 173. (New) The apparatus of claim 172 wherein the job identification is stored
2 in a job table, the job monitor clearing the job identification from the table when an end
3 of job is called by a port connection manager.

1 174. (New) The apparatus of claim 140 further comprising a job monitor for
2 examining process job states and variables to determine the correct response and to return
3 an appropriate job identification for a job.

1 175. (New) The apparatus of claim 140 further comprising a job monitor for
2 serving as a focal point for tracking job related events as they occur during the course of
3 an entire print process.

1 176. (New) The apparatus of claim 175 further comprising events definitions
2 for the job monitor.

1 177. (New) The apparatus of claim 140 further comprising a job monitor for
2 addressing job processing complexity by viewing a job on a higher conceptual plane
3 rather than managing a collection of attributes and status variables that is unique for each
4 data channel.

1 178. (New) The apparatus of claim 140 further comprising a job monitor for
2 providing a common method of accessing the variables associated with a job for the
3 components.

1 179. (New) An article of manufacture comprising a program storage medium
2 readable by a computer, the medium tangibly embodying one or more programs of
3 instructions executable by the computer to perform a method for providing printer
4 recognition and management of a print job entity, the method comprising:
5 establishing a repository of attributes and status information associated with each
6 print job that passes through a printer system;
7 providing an interface to a plurality of components to allow access to the
8 attributes and status information in the repository by the plurality of components;
9 establishing a job monitor for managing the repository of attributes and status
10 information associated with each print job, for responding to a call by a printer
11 component and for managing interactions between printer components in order to control
12 the processing of the job; and
13 fetching jobs, using, the job monitor, in an order that is dependent upon the
14 calling component.